HABEY

Enabling Unlimited Embedded Computing

BIS-6590
Owner's Manual

Fanless Ivy Bridge Dual GbE Barebone System with PCI & PCIe Expansion Slots

Disclaimer

Except for the accessories attached to the product as specified herein, what is contained in this user manual does not represent the commitments of Habey USA Company. Habey USA Company reserves the right to revise this User Manual, without prior notice, and will not be held liable for any direct, indirect, intended or unintended losses and/or hidden dangers due to improper installation or operation.

Before ordering products, please learn about the product performance from the distributors to see if it is in line with your needs.

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Safety Instructions

1. Please read the product manual carefully before using this product.

2. Put all the unused or uninstalled boards or electronic components on a static dissipative surface or in static shielding bag.

3. Always ground yourself to remove any static discharge before touching board. To ground, place your hands on a grounding metal object or wear a grounding wrist strap (not included) at all times.

4. When taking or fetching the boards or cards, please wear anti-static gloves and hold the boards by its edges.

5. Make sure that your power supply is set to the correct voltage in your area. Incorrect voltage may cause personal injuries and damage the system.

6. To prevent electronic shock hazard or any damage to the product, please ensure that all power cables for the devices are unplugged when adding or removing any devices or reconfiguring the system.

7. To prevent electrical shock, disconnect the power cable from the electrical outlet before relocating the system.

8. When adding or removing components to or from the system, ensure that all the power cables for the system are unplugged prior to installation or removal.

9. To prevent any unnecessary damage to the products due to frequent power on/off, please wait at least 30 seconds to restart the unit after the shutdown.

10. If the system fails during normal operation, do not attempt to fix yourself. Contact a qualified service technician or your retailer.

11. This product is classified as Class A product, which may cause radio interference in our living environment. In this occasion, users need to take measures to handle the interference.

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Packing List

Thank you for purchasing a Habey USA product. Please check this package carefully to ensure all parts are packaged. If you find any defective, damaged, or lost components, please contact your vendor or retailer ASAP.

Item	QTY.
BIS-6590	1
DC 12V 10A Power Adapter	1
Power Cord	1
Drivers and Utilities	1

Section 1 : Product Introduction

1.1 Overview

The BIS-6590 is an Intel Sandy/Ivy Bridge and Celeron CPU powered embedded system utilizing the next generation proprietary large “ICEFIN” thermal design. The design ensures maximum heat dissipation and is a true fanless system with Intel H61/Q77/B75 Chispets. 2x DDR3 DIMM slots support dual channel DDR3 1066/1333/1600 MHz , with maximum memory of up to 16GB . Does not support ECC . The VGA + DVI dual independent display outputs supports resolutions up to 2048x 1536. The fanless system also provides 1x SATA II / SATAIII hard disk interface , 6x USB 2.0, 2x COM, 2x Gigabit Ethernet ports and 1x8 channel GPIO . It also provides 1x PCIex4, 2x PCI for expansion flexibility. Other features include Wake on LAN and watchdog and other advanced features. This system can be used for Intelligent Transportation, Information Control, On-Board Vehicle Computing, Media Players, Digital Signage, Industrial Automation and many other applications.

1.2 Specification

Product Type	BIS-6660 The Next Generation Large “ICEFIN” Fanless Embedded System
Platform	Intel

Chassis	Color	Black
	Dimension	280mm× 219.2mm× 115 mm(W×D×H)
	Structure	“ICEFIN” Enclosure
	Material	Aluminum+ Fine Quality Galvanized Steel Sheet
Mother-board	Model No.	BPC-7937
	CPU	Intel LGA1155 Sandy Bridge/Ivy Bridge Core i3/i5 and Celeron CPUs
	Chipset	Intel H61/Q77/B75
	Memory	2x DDR3 DIMM slots support dual channel DDR3 1066/1333/1600 MHzRAM up to 16GB. Non-ECC
Storage	CF	N/A
	SSD	1x Mini PCIe SSD
	HDD	1x SATAII/SATAIII HDD
System Features	LAN	Realtek RTL8111E,10/100/1000Mbps,2x RJ45, Wake-on-LAN
	USB	H61 Chipset: 6x USB2.0; Q77 Chipset : 4x USB 2.0, 2x USB 3.0
	COM	2x COM. COM1/COM2 support RS232(DB9), COM2 also supports RS422/485
	Display	1x VGA (DB15), 1x DVI-D; VGA + DVI dual inde-pendent display
	Cooling Sys.	Fanless, “ICEFIN” thermal design
	Audio	ALC892, 5.1CH ,1x Mic-in, 1x Line-in, 1x Line-out
	Expansion	1x Mini PCIe supports Mini PCIe SSD. Inbuilt SIM slot for 3G Module. 2x PCI (optional 1x PCI & 1x PCIE X4) can be extended by Expansion slot
	LED	Power LED, HDD LED
	System Control	Power Switch
	PS/2	Reserved 2x 4Pin supports PS/2 keyboard and mouse
	WLAN	1x 3G/WiFi SMA antenna (optional)
	GPIO	8 bit GPIO
Power	Power Supply	DC +12V power adapter (Recommend to utilize high-power adapter if the power of CPU is over 65W)
Reliability	Installation	Desktop or Wallmounted
	Operating Temp	0°C - 60°C
	Storage Temp	-40°C - 85°C
	Relative Humidity	5%~95% relative humidity, non-condensing
	Operating Vibration	0.5g rms/5~500Hz/random operating
	EMC	CE/FCC Class B

1.2.1 Notes to use CPU

This product belongs to the Habey “ICEFIN” series. The BIS-6590 adopts the “ICEFIN” thermal design. Please note a CPU with a higher power consumption will dissipate more heat. If a CPU reaches its TJ Maximum (overheating) the system will underclock and result in a performance reduction. The following table shows the recommended CPU at different working temperatures:

Highest Temp	Max CPU Consumption	Recommended CPU Models
50° C	65W	Intel® Core™ i7-3770S @ 3.90GHz Intel® Core™ i5-3550S @ 3.00GHz Intel® Core™ i3-3220 @ 3.30GHz Intel® Celeron G530 @ 2.4GHz
60° C	35-45W	Intel® Core™ i3-3240T @ 2.90GHz Intel® Core™ i5-3470T @ 3.60GHz Intel® Core™ i7-3770T @ 3.70GHz Intel® Pentium G860T @ 3.60GHz
The CPUs listed in above table are the commonly used CPU. Select different CPU as per different working temperature.		

Section 2 Installation Instructions

Safety

Electricity is used to perform many useful functions, but it can also cause personal injuries and property damage if improperly handled. This product has been engineered and manufactured with the highest priority on safety. However, improper use can result in electric shock and/or fire. In order to ensure your safety and prolong the service life of the system, please observe the following and read the following precautions when installing and handling the product.

Warning

Always completely disconnect the power cord from your chassis whenever you work with the hardware. Do not make connections while the power is on. Sensitive electronic components can be damaged by sudden power surges. Only experienced electronics personnel should open the Player chassis.

Caution

• Please make sure the thermal conductive adhesive and thermal pad are properly coated and applied when installing the CPU and motherboard MOS heatsink. For help and instructions please contact a qualified technician or your retailer, for optimal cooling performance.

• Only use the original DC 12V 10A power adapter supplied by the manufacturer.

• It will be a normal for the chassis temperature to reach temperatures of up to 40-50°C when the system is working.

• Please read this manual in detail before using this product.

• The product specifications and pictures listed in this manual are subject to change with out prior notice.

Electrical Safety

• If the power supply is broken, do not try to fix it yourself. Contact a qualified service technician or your retailer.

• When adding or removing devices to or from the system, ensure that the power cables for the devices are unplugged before the signal cables are connected. If possible, disconnect all power cables from the existing system before you add a device.

• To prevent electrical shock hazard, disconnect the power cable from the electrical outlet before relocating the system.

• Before connecting or removing signal cables from the motherboard, please ensure that all power cables are unplugged.

• To prevent damage to the power cord, do not place heavy objects on, stretch, or bend power cord. Damage to the cord may result in or electric shock.

• Make sure that your power supply is set to the correct voltage in your area. Incorrect voltage may cause personal injuries and damage the system.

Operation Safety

• Before installing the motherboard and adding devices on it, carefully read all the guides that came with the package.

• To avoid short circuits, keep paper clips, screws, staples, and any other small metal objects away from connectors, slots, sockets and circuitry.

• Do not use the system where there is a lot of dust, humidity is high, or where the system may come into contact with oil or steam, as this could lead to fire.

• Ensure that the system does not come into contact with water or other fluids. Ensure that no objects such as paper clips or pins enter the system as this could lead to electric shock.

• Do not place the system in unsafe places. Do not allow the system to receive strong shocks or to strongly vibrate. This may cause the system to fall or topple over damaging the system.

• Do not use the system near heating equipment or in places where there is likelihood of high temperature, as this may lead to excessive heat and outbreak of fire.

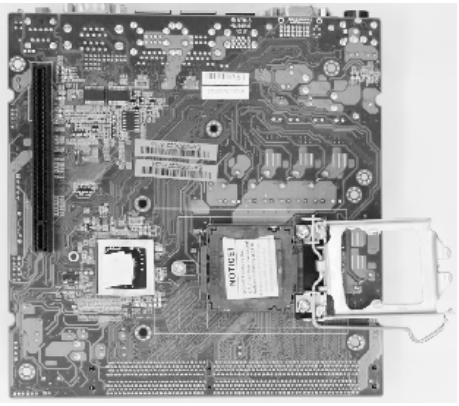
• Do not use the system in places where it may be exposed to direct sunlight.

2.1 Remove the Computer Cover

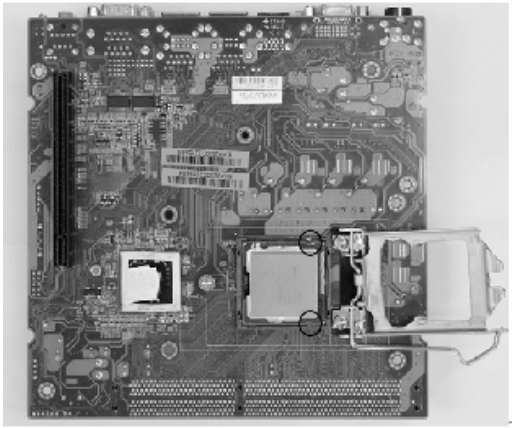
Remove the four screws on cover and dismount the cover.

2.2 Install Motherboard

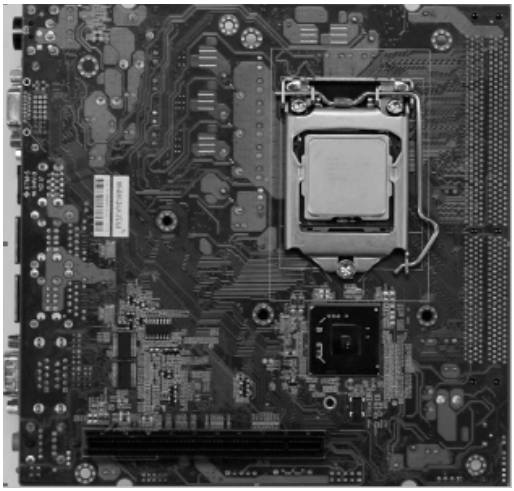
2.2.1 Install CPU & Thermal Pad



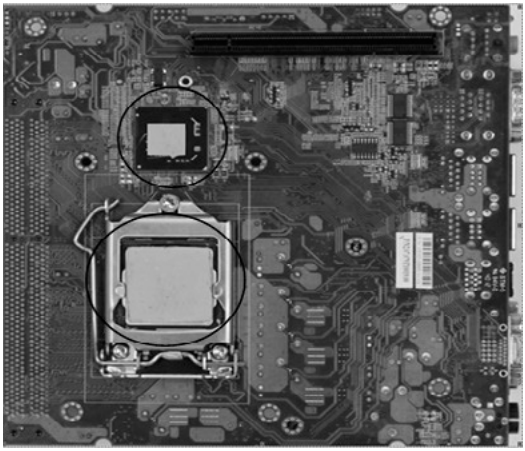
Unlock the buckle and remove the CPU base cover.



The part circled in black in the picture is the CPU buckle footstand. Align CPU with its footstand and press it into its socket evenly.



Lock and tighten CPU buckle.

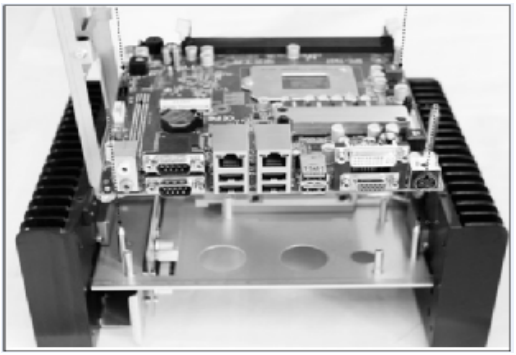


The thermal pad is tailored as per the size of CPU and Chipset and is pressed on to the CPU and south-bridge evenly with fingers.

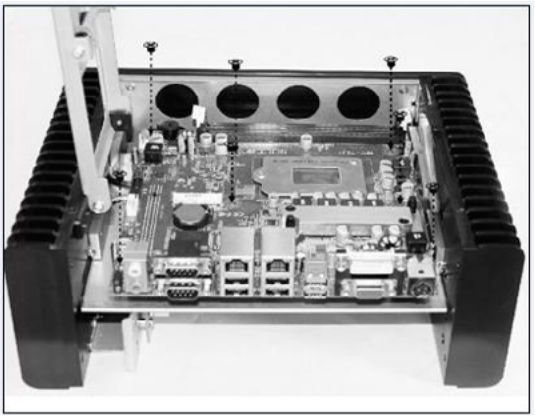
2.1.2 Dismount the Rear Panel

Loosen the four screws on the side of the rear panel and remove the rear panel module.

2.1.3 Install Motherboard

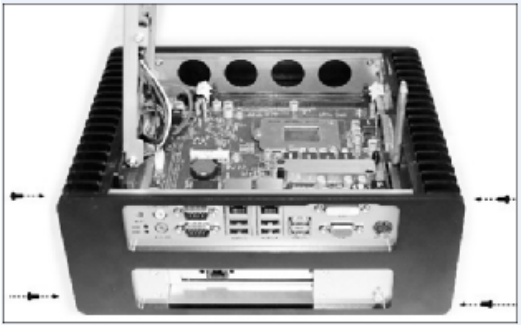


Align the semi-circle guide holes of the motherboard with the four guide posts on the bracket and place the motherboard on the back cover evenly. Insert the expansion slots into the expansion board connecting finger.



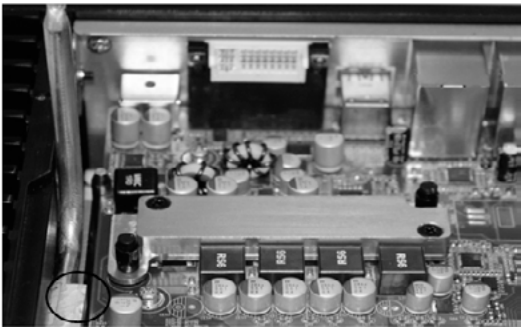
Tighten the 7 screws onboard that fix the motherboard (M3x6mm screw x7PCS).

2.1.4 Mount the Rear Panel

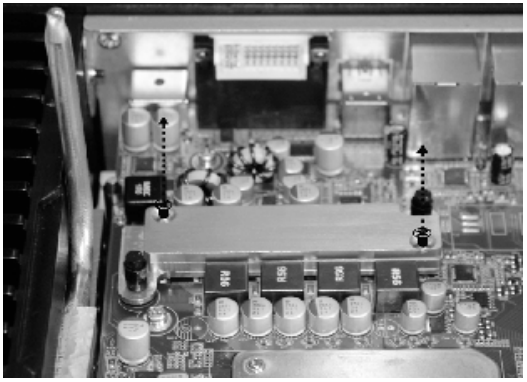


Mount back the rear panel and tighten the four screws on panel

2.3 Install Motherboard MOS Heatsink

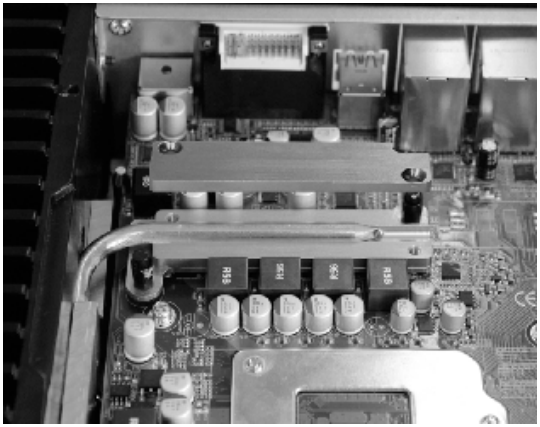


Install the thermal conductive copper pipe inside the chassis. Loosen the two screws on the left side panel (marked with black circle) and rotate the heat pipe to the side panel locating slot.

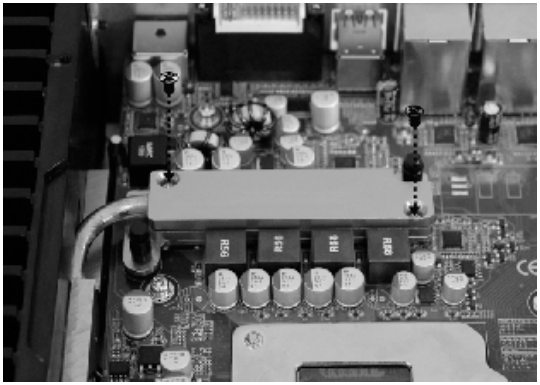


Remove the two screws on MOS lock block and remove the lock block.

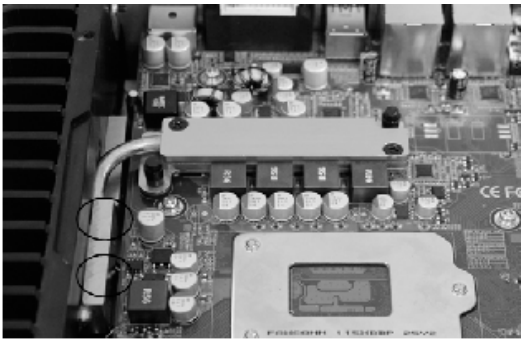
Make sure the heat conductive module slot is coating with thermal conductive silicon.



Put the heat pipe into MOS heatsink socket and cover it with MOS lock block.

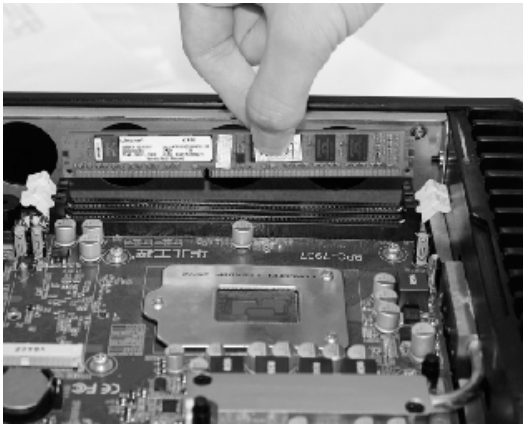


Tighten the two screws of the lock block.

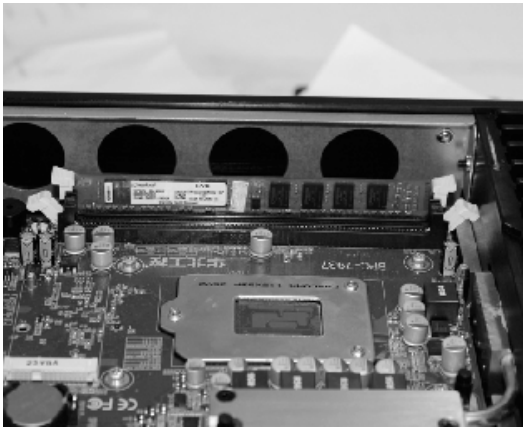


Tighten the two screws on the left side panel, that is outside the position marked in black circle.

2.4 Install Ram

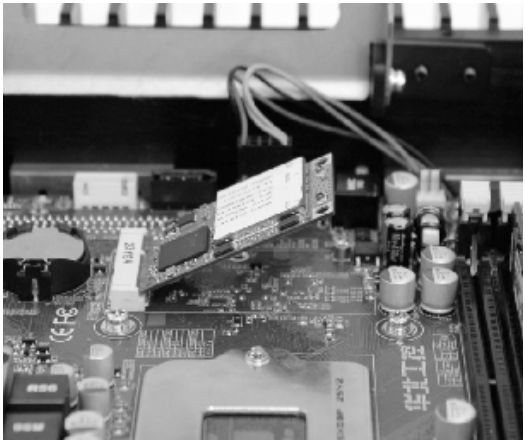


Unlock the buckle of the memory socket and remove the memory bank.

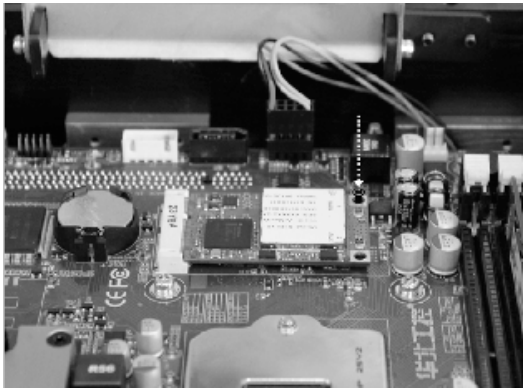


Align the memory bank with the memory slot and press the memory bank downward into the slot. Check if the buckle locks the memory bank.

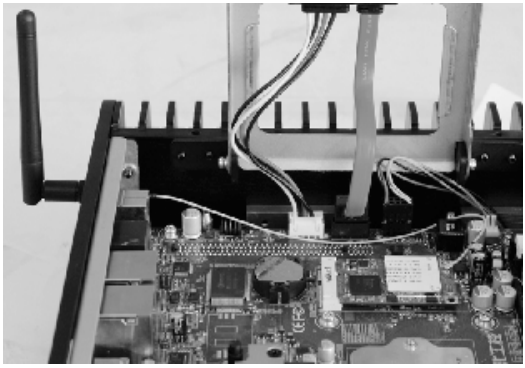
2.5 Install Mini-PCIe Devices



Remove the screws Onboard that fix the Mini PCIe devices. Then insert the device into the socket at a 45 degree angle.

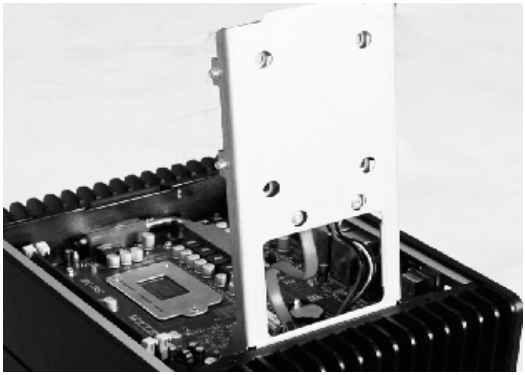


Press the Mini PCIe devices downward and align the holes to tighten the screws.

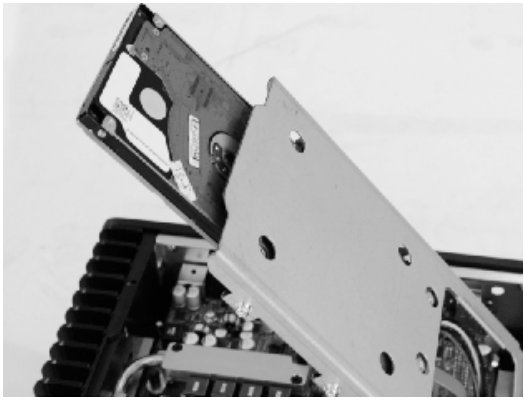


If the Mini PCIe device has a WiFi antenna, please connect the Antenna connector to the WiFi Antenna hole on the chassis and then connect the connector with Mini PCIe device inside the chassis.

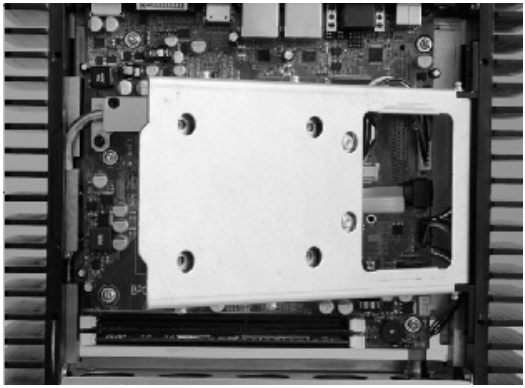
2.6 Install HDD



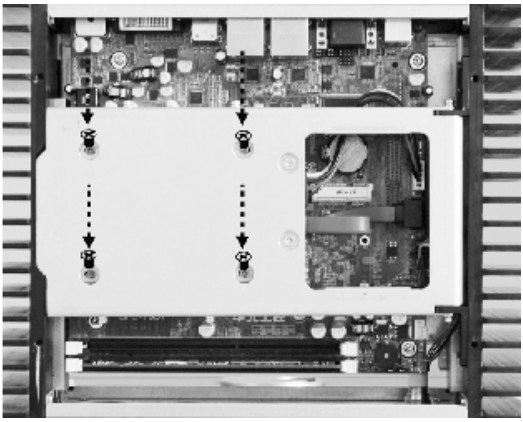
Pull the HDD tray upward at a 90 degree angle.



Insert the hard disk into the HDD tray.



Close HDD tray.



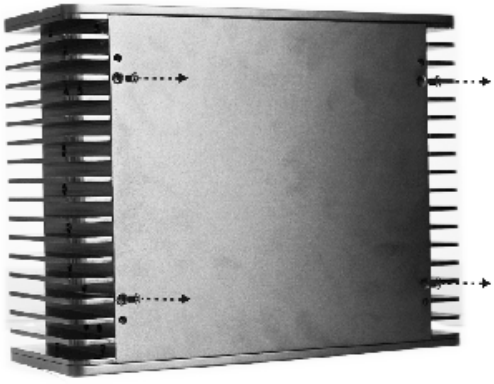
Use a screwdriver to tighten the four screws on the tray , so as to fix the hard disk.

(M3x4mmscrews x4PCS)

2.7 Mount Top Cover

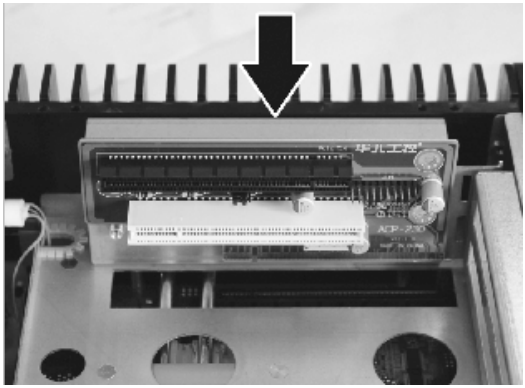
Mount the computer top cover and tighten the four screws on the cover.

2.8 Dismount Bottom Cover

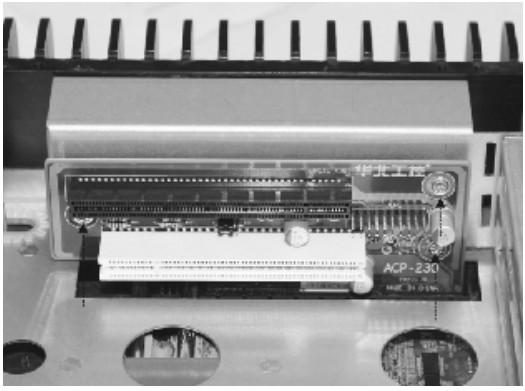


Remove the four screws on the product footpads and dismount footpads and the bottom cover.

2.9 Install PCI / PCIe Cards

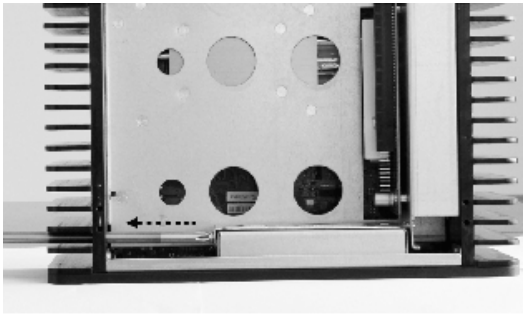


Align the PCI/PCIE expansion cards with the PCI-e Socket and press downward.

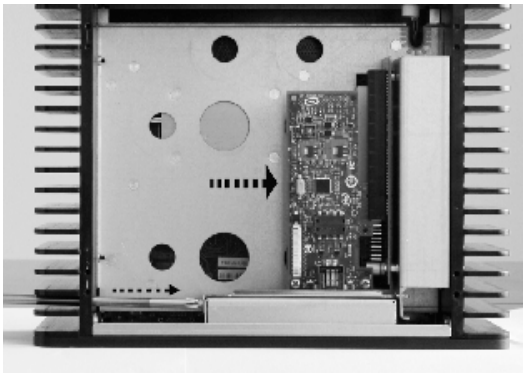


Then use screws to fix the PCI/PCIE Card on the bracket.

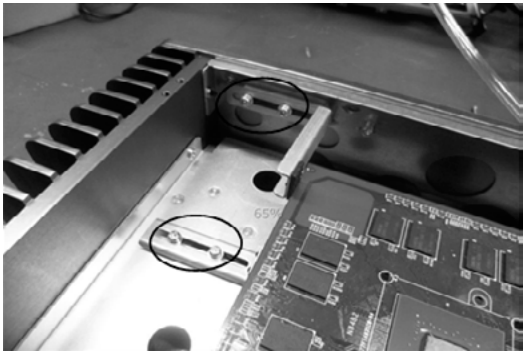
2.10 Install PCI / PCIe Devices



Use cross screwdriver to remove the rear window baffle.

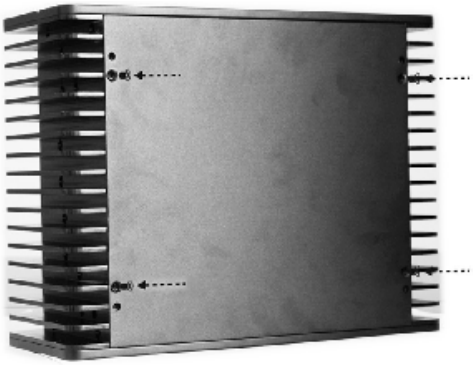


Insert the PCI or PCI-e device into its corresponding slots and tighten the screws on the baffle to fix the PCI/PCI-e device.

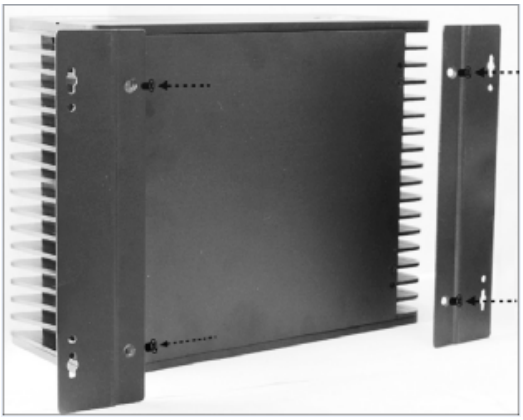


Adjust the screws in the marked position to hold the PCI/PCIe device and keep cards from dislodging.

2.11 Mount Bottom Cover and Racks

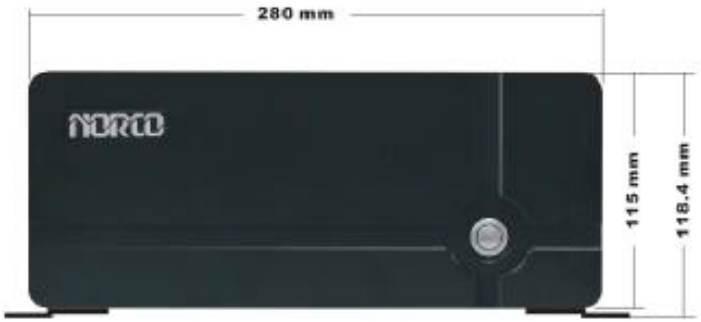


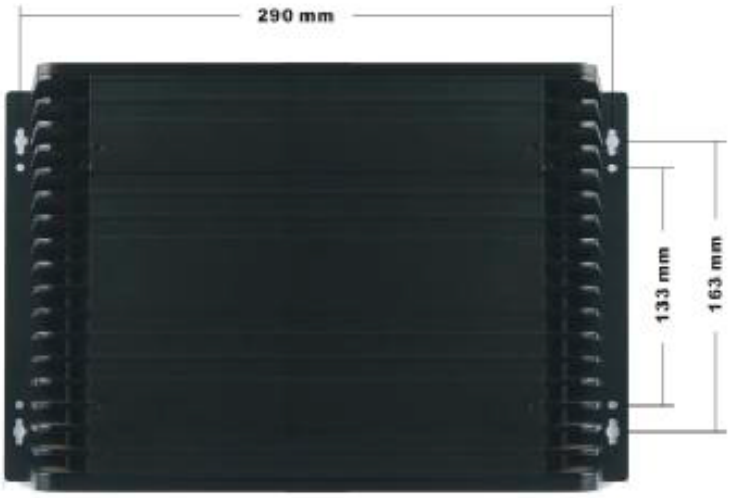
Mount the bottom cover and tighten the four screws to fix the cover.



Finally, use screws to fix the racks onto the chassis base.

2.12 Rack Dimensions

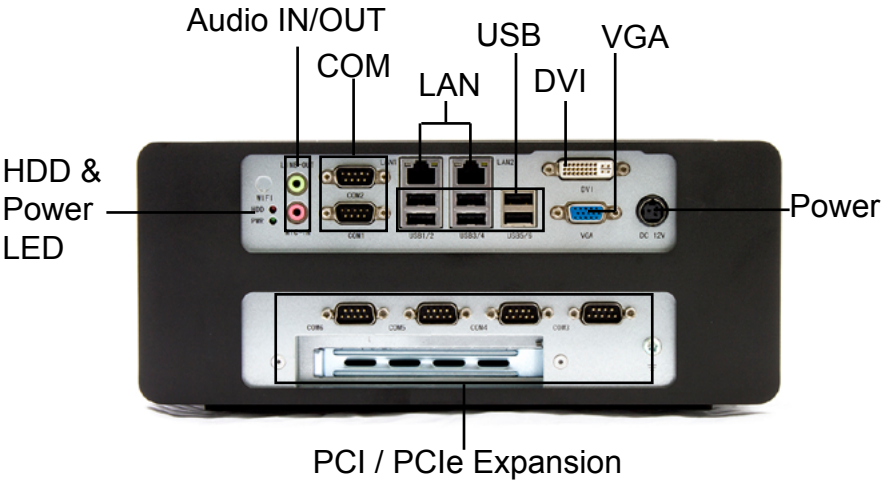




Section 3 Hardware Functions

3.1 External Interface Location

1: BIS-6590 Rear I/O



1: BIS-6590 Front

3.1.1 Serial Ports (COM1, COM2)

Board provides 2x serial ports. COM1/ COM2 are the standard DB9 interface.

COM1 supports RS232.
COM2 supports RS232/RS422/RS485.

COM1/COM2:

PIN	Signal Name
1	DCD
2	TXD
3	RXD
4	DTR
5	GND
6	DSR
7	RTS
8	CTS
9	RI

COM2: RS232/RS422/RS485, Pins define as below:

PIN	RS232 (Default)	RS422	RS485
1	DCD	TX-	DATA-
2	TXD	TX+	DATA+
3	RXD	RX+	NC
4	DTR	RX-	NC
5	GND	GND	GND
6	DSR	NC	NC
7	RTS	NC	NC
8	CTS	NC	NC
9	RI	NC	NC

3.1.2 Ethernet Port (LAN1, LAN2)

BPC-7937 provides 2x RJ-45 Gigabit Ethernet Ports. Both sides of the RJ-45 interface has one LED lamp. The yellow one indicates data transfer status. The green one indicates network link status.

LILED (GREEN)	FUNCTION	ACTLED (Yellow)	Function
ON	10/100/1000m Link	Flash	Data Transfer

3.1.3 Audio (Line-out, Line-in, Mic-in)

BPC-7937 adopts ALC892 audio controller chip. The green one is Line-out. The pink one is Mic-in. Inbuilt one 1x3Pin Line-in expansion interface.

Pin	Signal Name
1	LINE_L
2	GND
3	LINE_R

3.1.4 Display Interface (VGA, DVI-D)

BPC-7937 provides one standard 15Pin VGA port to connect VGA display. One DVI-D port to connect DVI-D display.

VGA:

Pin	Signal Name	Pin	Signal Name	Pin	Signal Name
1	RED	6	GND	11	NC
2	GREEN	7	GND	12	SDA
3	BLUE	8	GND	13	HSYNC
4	NC	9	+5V	14	VSYNC
5	GND	10	GND	15	SCL

DVI-D:

Signal Name	Pin		Signal Name
TDC2#	1	2	TDC2
GND	3	4	NC
NC	5	6	SD-DDC
SD-DDC	7	8	NC
TDC1#	9	10	TDC1
GND	11	12	NC
NC	13	14	VCC
GND	15	16	HP-DETECT
TDC0#	17	18	TDC0
GND	19	20	NC
NC	12	22	GND
TLC	23	24	TLC#
NC	C1	C2	NC
NC	C3	C4	NC

3.1.5 Power Interface (DC_JACK)

DC_JACK:

Pin	Signal Name
1	+12V
2	GND
3	NC

3.1.6 USB Ports (USB12, USB34, USB56)

USB12, USB 34, USB56:

Pin	Signal Name
1	+5V
2	USB DATA-
3	USB DATA+
4	GND

3.2 Jumper Settings

Please refer to following instructions to do jumper settings before installing the motherboard. Remark: How to identify the PIN1 of all jumpers and interfaces: Please observe the word mark on the side of the plug socket, which will be a “1” or bold line or triangular symbol; And please look at the back of PCB, each with a square shape will be the PIN 1; and all the jumpers’ PIN1 have a white arrow on the side.

3.2.1 CMOS Clear/Hold Jumper Setting (JCC)

CMOS is powered by the onboard button cell. Clear CMOS will lead to permanent elimination of previous system settings and back to the original system setting (factory default).

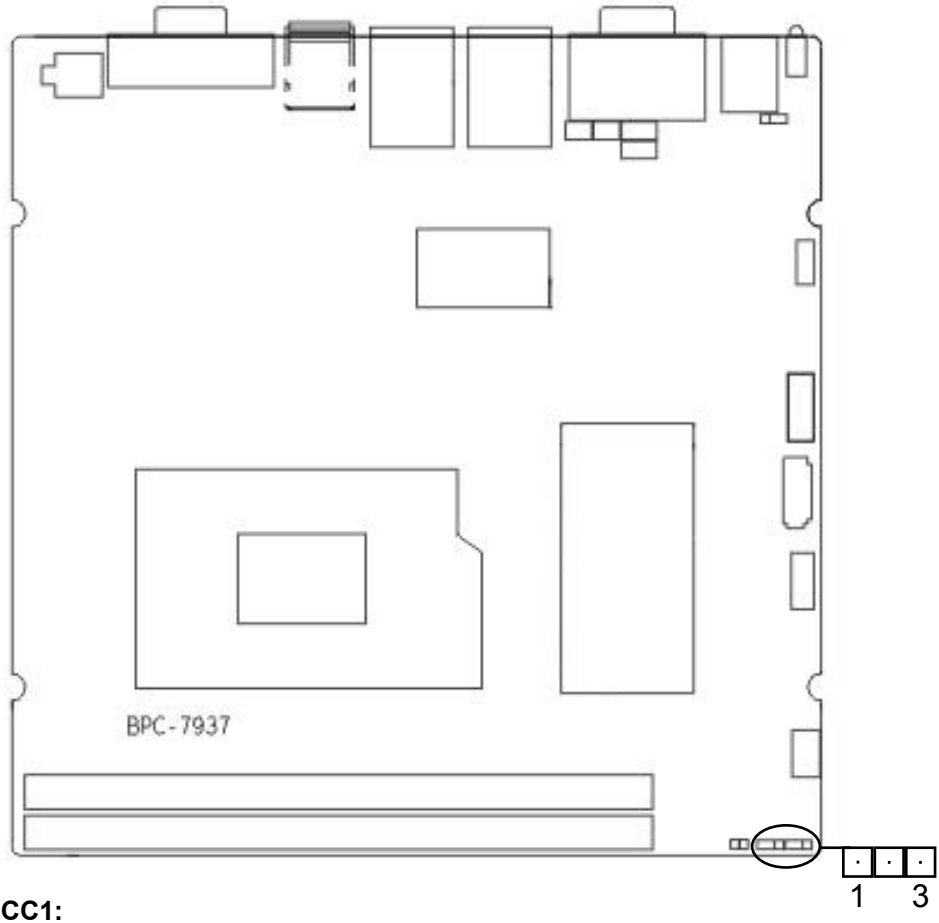
Steps:

(1) Turn off the computer and disconnect power supply.

(2) Use Jumper Cap JCC Pin1-2 short for 5~6 sec. Then restore the default setting with Pin2-3 connected.

(3) Turn on the computer, then press “DEL” key to enter BIOS setting and reload optimal defaults.

(4) Save and Exit.

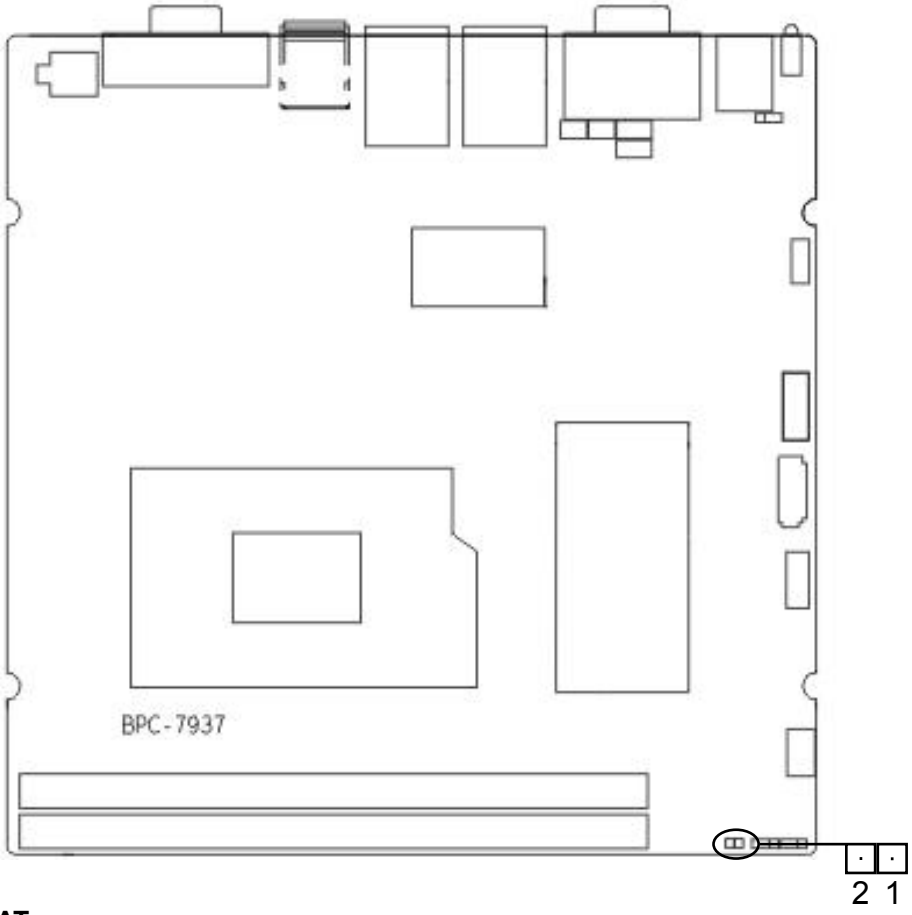


JCC1:

Settings	JCC
1-2	BIOS back to initialization (factory default)
2-3	Normal Status, System Default

Do not clear CMOS when the computer is power on, otherwise, it will cause damage to the motherboard.

3.2.2 Hardware Switch for System Auto Boot Upon Power On JAT)

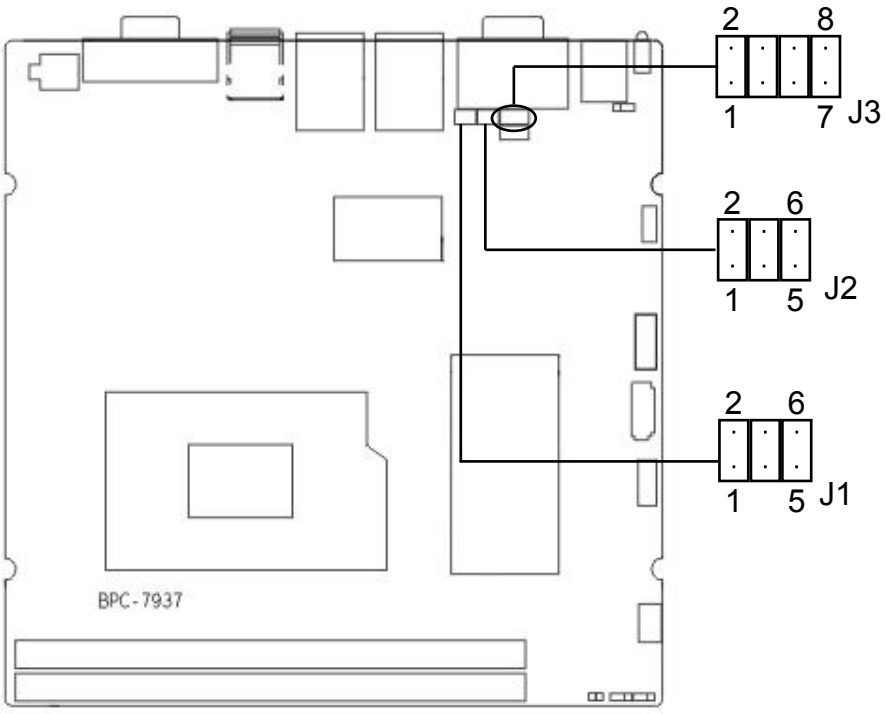


JAT:

Settings	JAT
Open	Non-auto boot upon power on
Close	Auto boot upon power on

3.2.3 COM2 Jumper Setting (J1, J2, J3)

J1, J2, J3 jumpers are used to configure COM2 transmission mode. COM2 supports RS232/RS422/RS485. Default mode as RS232.

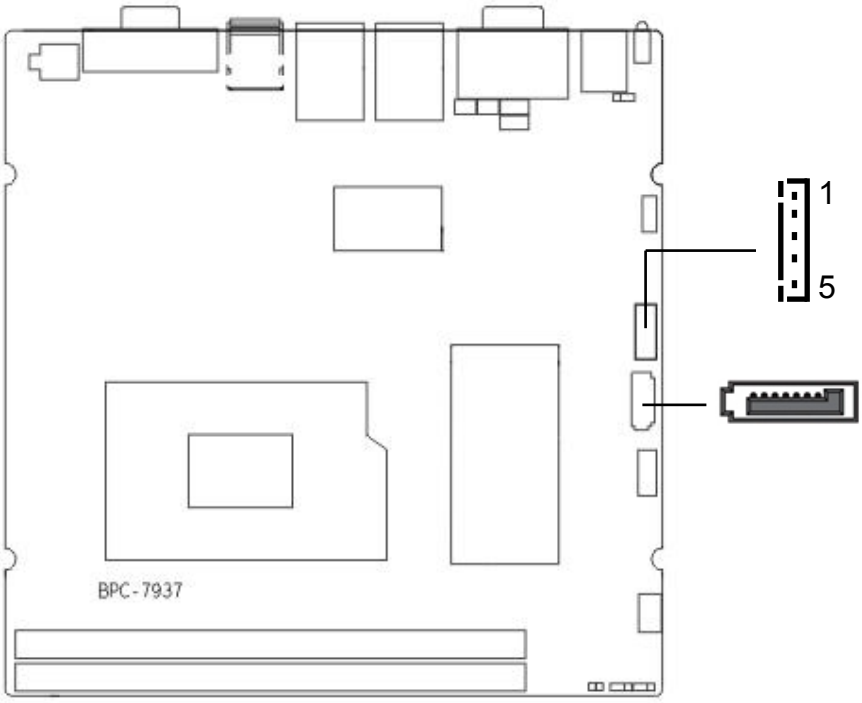


COM2 RS232 (default)		COM2 RS422		COM2 RS485	
J1	1-3, 2-4	J1	3-5, 4-6	J1	3-5, 4-6
J2	1-3, 2-4	J2	3-5, 4-6	J2	3-5, 4-6
J3	1-2	J3	3-4	J3	5-6, 7-8

3.3 Internal Interfaces

3.3.1 SATA Port (SATA1)

Board provides one standard 7Pin SATA port and one 5Pin SATA Power Interface. The SATA power interface (J7) are used to provide power supply to SATA HDD with an extension cable.



SATA1:

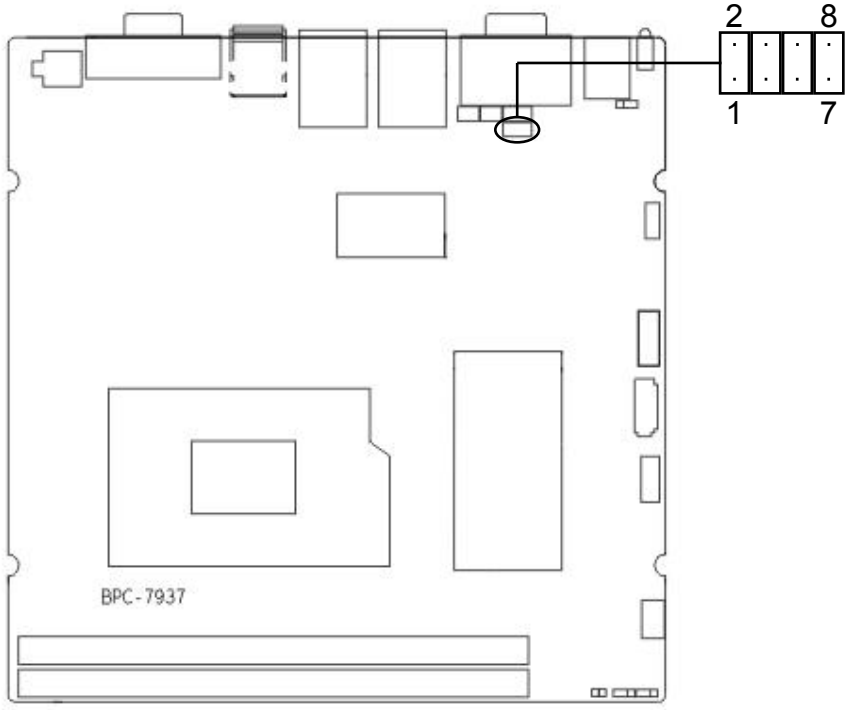
Pin	Signal Name
1	GND
2	TX+
3	TX-
4	GND
5	RS-
6	RS+
7	GND

J7:

Pin	
1	+12V
2	GND
3	VCC
4	GND
5	VCC3

3.3.2 Keyboard & Mouse Interface (KM)

Board provides one 2×4Pin keyboard and mouse interface, to be converted to standard PS/2 interface with an extension cable.

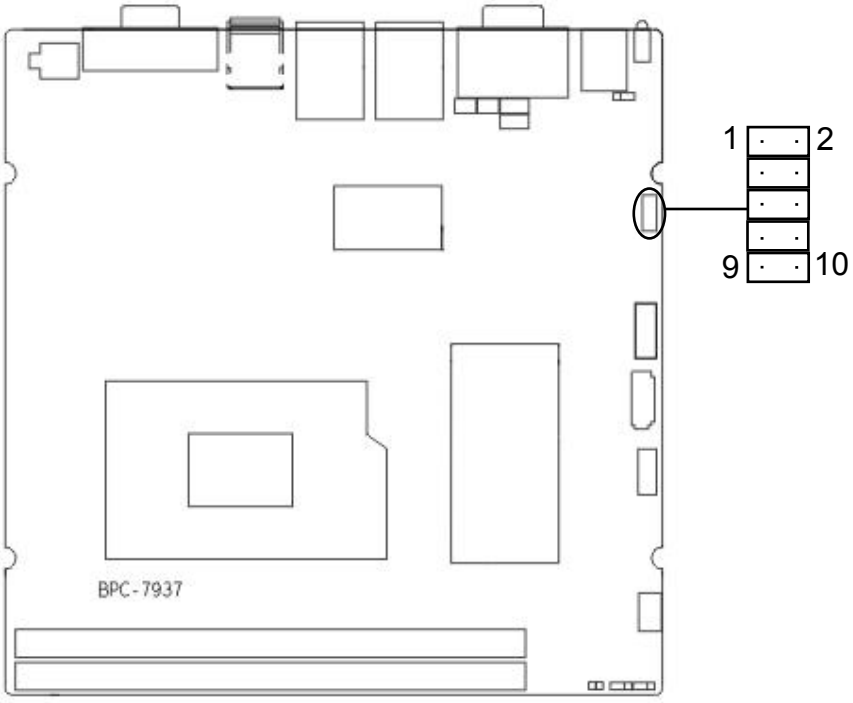


KM:

Signal Name	Pin		Signal Name
VCC	1	2	MS_CLK
GND	3	4	MS_DATA
KB_DATA	5	6	GND
KB_CLK	7	8	VCC

3.3.3 GPIO (JGP)

General purpose programmable input/output port.

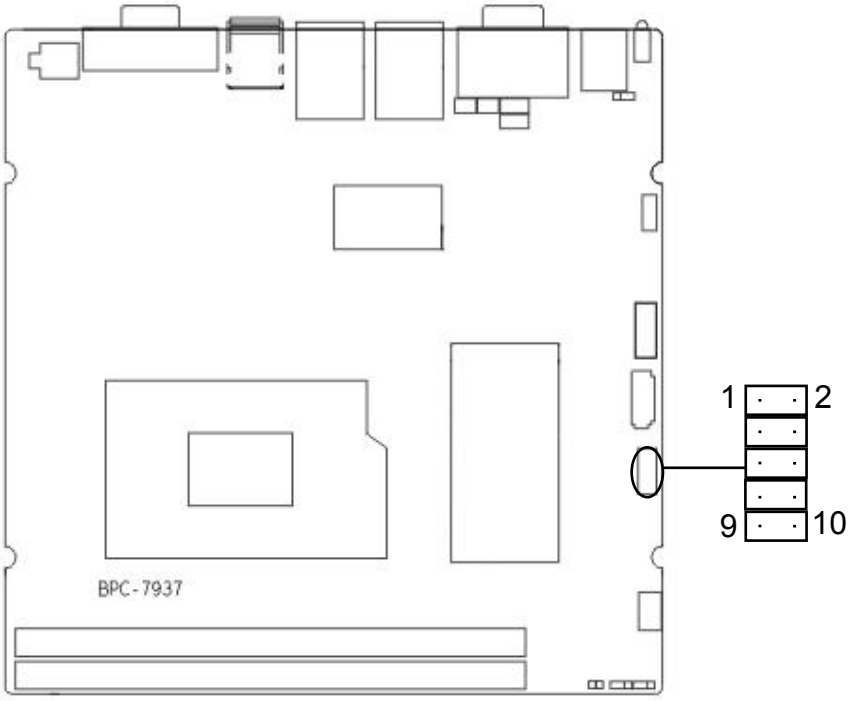


JGP:

Signal Name	Pin		Signal Name
GPIO30	1	2	VCC
GPIO31	3	4	GPIO34
GPIO32	5	6	GPIO35
GPIO33	7	8	GPIO36
GND	9	10	GPIO37

3.3.4 Front Panel Interface (JFP)

JFP is used to connect the function buttons and LED lamps on the front panel.



JFP:

Signal Name	Pin		Signal Name
PWR_LED+	1	2	PWR_LED-
PWR_LED-	3	4	HDD_LED-
SPK+	5	6	SPK-
RST_SW+	7	8	RST_SW-
PWR_SW+	9	10	PWR_SW-

Please follow the table below to connect, pay attention to the anode(+) and cathode(-), otherwise , some function can not be realized.

POWER LED
HDD LED
BUZZ
RESET BUTTON
POWER BUTTON

1) System Power LED Pins (Pin 1/2 for PWRLED)
Connect system power LED cable with these pins.(pin 1 is LED anode) When system is power on, power LED is on: when system is power off, power LED is off.

2) HD LED Pins (Pin3/4 for HDD LED)
Case panel with one HD LED indicating HD status. When HD read and write, the LED will flash, indicating the device is working. Connect the LED cable to the LED pins (Pin3 is LED anode).

3) Buzzer Pins (Pin5/6 for SPEAKER)
External Speaker Pins.

4) Reset Button Pins (Pin7/8 for RESET)
Connect the reset button cable to these two pins. When system fails, reset button can make the system continue to work and no need to turn on / off the power.

5)Power Button Pins (Pin 9/10 for POWER BUTTON)
Connect these two pins to the bounce switch on the chassis to connect or disconnect the power supply.

3.3.5 DIMM Slot

Board with 2x dual channel DIMM slots support DDRIII 1066/1333 MHz RAM up to 16GB.

3.3.6 Mini PCIe Socket

Board provides one MINI PCIe socket. If you use the Mini PCIE WiFi, the status of which will be determined by the wireless network that you choose.(MINI PCIe port can support WiFi, 3G module or SSD (EPC SDD or mSATA SDD optional).

3.3.7 PCIe X16 Slot

Board provides one non-standard PCIe X16 slot. H61 Chipset supports ACP-230 card (with PCIe/PCI port). H61 chipset supports PCIe port only, no PCI port. Chipset Q77 support ACP-230 and ACP-228P cards, supporting PCIe & PCI port.

Section 4 BIOS Setup

BIOS functions as a bridge connecting hardware and operating system. Hardware and software are upgrading all the time, so when your system goes wrong, for example, your system can not support the newest CPU, you need to upgrade BIOS to keep up with the latest technology.

FPT.EXE is the FLASH IC program for BIOS to upgrade, which needs to be run in DOS mode. Please use a boot disk to load DOS, then run FPT. EXE to upgrade BIOS (for example: write XXXX.BIN into FLASH IC)

Operational Commands:
A:\ fpt /f 7937I702.BIN
If you need to add other parameters after the order format, please add <space>/?

Note:
1. BIOS Flash is only executed when it is necessary
2. Please use the BIOS SETUP Utility in the CD-ROM provided by us or download the latest version on related websites
3. Please do not power off or reboot the system when flash BIOS, otherwise, the BIOS maybe be damaged or system may not be able to boot again.
4. After finishing BIOS Flash, load the optimal defaults manually
5.To prevent any unexpected problems, please backup your BIOS in advance.

AMI BIOS Description
When the computer is power on, BIOS will conduct self-diagnosis to its hardware on motherboard and configure hardware parameter, finally the operating system will take control. BIOS is the communication bridge between hardware and O/S. Correct configuration of BIOS is critical for maintaining system stability and its optimized performance.

BIOS Settings
1. Power on or restart the system, self-detection message will display on the screen.
2. When system pops out the prompt “Press <Del> to enter setup, <F11> to Popup menu “ , please press <Del> key to enter BIOS setup interface.
3. Use the “←↑→↓”to select the option which your want to modify, press <Enter> to go to the sub-menu.
4. Use the “←↑→↓”and <Enter> to modify the value; press”Enter” to modify BIOS options that you choose.
5. At any time, press <Esc> can go back to the father-menu.

4.1 Main Menu

<table>
<tr><td colspan="3">Aptio Setup Utility_Copyright (C) 2012 American Megatrends,Inc.</td></tr>
<tr><td colspan="2">BIOS Information</td><td rowspan="4">Set the Date. Use [Tab] to switch between date elements.</td></tr>
<tr><td>BIOS Vendor</td><td>American Megatrends</td></tr>
<tr><td>BIOS Version</td><td>7937I702</td></tr>
<tr><td>Build Date & Time</td><td>11/08/2012 09:40:44</td></tr>
<tr><td colspan="2">CPU Information</td><td rowspan="15">→←: Select Screen
↑↓: Select Item
Enter: Select
+/-: Change Option
F1: General Help
F2: Previous Value
F9: Optimize Defaults
F10: Save & Exit
ESC: Exit</td></tr>
<tr><td colspan="2">Inter(R) Core(TM) i7-3770 CPU @ 3.40GHZ</td></tr>
<tr><td colspan="2"></td></tr>
<tr><td colspan="2">Memory Information</td></tr>
<tr><td>Total Memory</td><td>1024 MB (DDR3)</td></tr>
<tr><td colspan="2"></td></tr>
<tr><td>Intel SouthBridge Name</td><td>H61</td></tr>
<tr><td>Stepping</td><td>05/B3</td></tr>
<tr><td colspan="2"></td></tr>
<tr><td>ME FW Version</td><td>8.1.0.1248</td></tr>
<tr><td>ME Firmware SKU</td><td>1.5MB</td></tr>
<tr><td>System Date</td><td>[Tue 01/03/2012]</td></tr>
<tr><td>System Time</td><td>[03:38:53]</td></tr>
<tr><td colspan="3">Version 2.15.1227. Copyright © 2012 American Megatrends, Inc.</td></tr>
</table>

BIOS Vendor
BIOS Vendor: American Megatrends
BIOS Version
BIOS Version: 7937I702
Build Date and Time
BIOS Date and Time: 11/08/2012 09:40:44
System Date
System Date Format: Week(Mon.□Sun.)/Month(Jan.-Dec.)/Day(01-31)/ Year (upto 2009).
System Time
System Time Format: Hour(00-23)/Minute(00-59)/Second(00-59)..
Intel SouthBridge Name
Intel Southbridge Name.
Stepping
Intel Southbridge Version
ME FW Version/ ME Firmware SKU
BIOS ME Version

4.2 Advanced Menu

Aptio Setup Utility_Copyright (C) 2012 American Megatrends,Inc.		
Legacy OpROM Support		Enable or Disable Boot Option for Legacy Network Devices.
Launch LAN1 PXE OpROM	[Disabled]	
Launch LAN2 PXE OpROM	[Disabled]	

ACPI Setting	→←: Select Screen
APM Configuration	↑↓: Select Item
CPU Configuration	Enter: Select
SATA Configuration	+/-: Change Option
USB Configuration	F1: General Help
Super IO Configuration	F2: Previous Value
H/W Monitor	F9: Optimize Defaults
	F10: Save & Exit
	ESC: Exit
Version 2.15.1227. Copyright © 2012 American Megatrends, Inc.	

Launch LAN1/LAN2 PXE OpROM
Enable or disable Boot Option for Legacy Network Devices (Launch LAN1/LAN2(82574L) PXE OpROM).

4.2.1 ACPI Settings

Aptio Setup Utility_Copyright (C) 2012 American Megatrends,Inc.		
ACPI Sleep State	[S1 (CPU Stop Clock)]	Select the highest ACPI sleep state the system will enter when the SUSPEND button is pressed.
		→←: Select Screen ↑↓: Select Item Enter: Select +/-: Change Option F1: General Help F2: Previous Value F9: Optimize Defaults F10: Save & Exit ESC: Exit
Version 2.15.1227. Copyright © 2012 American Megatrends, Inc.		

ACPI Sleep State

Select highest APCI sleep state the system will enter when the SUSPEND button is pressed. Different modes with different power consumption.

S1(pos): CPU stops working while other devices are still connected to power supply.
S3(STR): Power is only supplied to system memory.

4.2.2 APM Configuration

Aptio Setup Utility_Copyright (C) 2012 American Megatrends,Inc.	
RTC Power On Function [Disabled]	Enable or Disable System wake on alarm event. When enabled, System will wake on the hr::min::sec specified.
	→←: Select Screen ↑↓: Select Item Enter: Select +/-: Change Option F1: General Help F2: Previous Value F9: Optimize Defaults F10: Save & Exit ESC: Exit
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RTC Power On Function

Enable or Disable System wake on alarm event. When enabled, System will wake on the hr::min::sec specified.

When “RTC Power On Function” is enabled, RTC power on can be set On.

4.2.3 CPU Configuration

Aptio Setup Utility_Copyright (C) 2012 American Megatrends,Inc.	
CPU Configuration	Enabled for Windows XP and Linux (OS optimized for Hyper-Threading Technology) And Disabled for other OS (OS not optimized for Hyper Threading Technology). When Disabled only one thread Per enabled core is enabled
Intel(R) Core(TM) i7-3770 CPU @ 3.40GHZ	
CPU Signature 306a8	
Microcode Patch 10	
Max CPU Speed 3400 MHZ	
Min CPU Speed 1600 MHZ	
CPU Speed 3400 MHZ	
Processor Cores 4	
Intel HT Technology Supported	
Intel VT-x Technology Supported	
Intel SMX Technology Supported	
64-bit Supported	
L1 Data cache 32 KB x 4	→←: Select Screen
L1 Data cache 32 KB x 4	↑↓: Select Item
L2 cache 256 KB x 4	Enter: Select
L2 cache 8192 KB	+/-: Change Option
Hyper threading [Enabled]	F1: General Help
Active Processor Cores [All]	F2: Previous Value
Limit CPUID Maximum [Disabled]	F9: Optimize Defaults
Execute Disable Bit [Enabled]	F10: Save & Exit
Intel Virtualization Technology [Disabled]	ESC: Exit
Hardware Prefetcher [Enabled]	
Adjacent Cache Line Prefetch [Enabled]	
CPU PPM Configuration	
Version 2.15.1227. Copyright © 2012 American Megatrends, Inc.	

Hyper-threading
This option is configured to activate or deactivate the CPU Hyper Threading Technology. Intel® Hyper-Threading Technology uses resources efficiently, enabling multiple threads to run on each core, and increasing processor throughput.

Execute Disable Bit
Execute Disable Bit (EDB) is a hardware-based security feature that introduced to its new generation CPU by Intel, which can help reduce system exposure to viruses and malicious code. EDB allows the processor to classify areas in memory where application code can or cannot execute. To use Execute Disable Bit you must have Windows XP SP2 operating system to support this function.

Intel Virtualization Technology
Disable or enable Intel Virtualization Technology. Intel virtualization technology enables to run multiple O/S of the same kind or different kind by using the same physical platform so as to realize the management and allocation of computer resources, maximizing the resource utilization.

Press Enter key to enter ”CPU PPM Configuration” interface and select to enable or disable CPU POWER-SAVING function.

4.2.4 SATA Configuration

Aptio Setup Utility_Copyright (C) 2012 American Megatrends,Inc.		
SATA Controller(s)	[Enabled]	Enable or disable SATA Device
SATA Mode Selection	[IDE]	→←: Select Screen ↑↓: Select Item Enter: Select +/-: Change Option F1: General Help F2: Previous Value F9: Optimize Defaults F10: Save & Exit ESC: Exit
Serial ATA Port 1	Empty	
Version 2.15.1227. Copyright © 2012 American Megatrends, Inc.		

Serial-ATA Controller(S)
To enable or disable the Serial-ATA Controller. Availabel setting values include [Disabled], [Enhanced], [Compatible].

SATA Mode Selection
SATA Mode Selection, including AHCI mode and IDE mode.

4.2.5 USB Configuration

Aptio Setup Utility_Copyright (C) 2012 American Megatrends,Inc.	
USB Configuration USB Devices: 1 Drive, 1Keyboard,1 Hubs Legacy USB Support [Enabled] XHCI Hand off [Enabled] EHCI Hand off [Disabled] USB hardware delays and time-outs: USB transfer time-out [20 sec] Device reset time-out [20 sec] Device power-up delay [Auto] Mass Storage Devices: KingstonDataTraveler G3 PMAP [Auto]	Enables Legacy USB support. AUTO option disables legacy Support if no USB devices are Connected. DISABLE option will Keep USB devices available Only for EFI applications. →←: Select Screen ↑↓: Select Item Enter: Select +/-: Change Option F1: General Help F2: Previous Value F9: Optimize Defaults F10: Save & Exit ESC: Exit
Version 2.15.1227. Copyright © 2012 American Megatrends, Inc.	

Legacy USB Support
To support USB device in DOS mode: such as USB Flash Disk, USB keyboard, please select <Enabled> or<Auto>. Enables Legacy USB support. AUTO option disables legacy support if no USB devices are Connected. DISABLE option will Keep USB devices available only for EFI applications.

Mass Storage Devices
To select the types of the connected USB devices. [Auto], or [floppy] or [Forced FDD], [HDD] or CD-ROM. System defaults as [Auto]. USB Transfer time-out USB Transfer time-out can be set as 1/5/10/20 seconds. The default time-out value is 20 seconds.

Device Reset Time-Out
To setup the USB Mass Storage Reset time-out: 10 sec, 20sec, 30sec or 40sec. The default time-out value is 20 seconds.

Device Power-up Delay
To set the number of seconds you wait for the BIOS to attempt to initialize and recognize USB device. [Auto] or [Manual]. [Auto]: 100ms for Root to recognize USB device. For the delay time for HUB, refer to HUB instructions. [Manual]: To set device Power-up delay in second manually. Set the value of Device Power-up Delay to be 1sec to 40 seconds.

4.2.6 Super I/O Configuration

Aptio Setup Utility_Copyright (C) 2012 American Megatrends,Inc.	
Super IO Configuration Serial Port 1 Configuration Serial Port 2 Configuration	Set Parameters of Serial Port 1 (COM1 →←: Select Screen ↑↓: Select Item Enter: Select +/-: Change Option F1: General Help F2: Previous Value F9: Optimize Defaults F10: Save & Exit ESC: Exit
Version 2.15.1227. Copyright © 2012 American Megatrends, Inc.	

Serial Port 1 Configuration

1) Serial Port

To enable or disable the serial port functions.

2) Device Setting (Read Only)

Set serial port IRQ and base address.

3) Change Setting

To change serial port settings. Recommend to select [Auto]. Serial Port 2 Configuration follows the same steps as above.

4.2.7 H/W Monitor

Aptio Setup Utility_Copyright (C) 2012 American Megatrends,Inc.	
PC Health Status	Enable or Disable Smart Fan
Smart Fan Function [Enabled] SYSTIN temperature : +32°C CPUTIN temperature : +55°C CPU Fan Speed : N/A CPUVCORE : +0.976 V +3.3VIN : +3.296 V +5VIN : +4.975 V +12VIN : +11.457 V	→←: Select Screen ↑↓: Select Item Enter: Select +/-: Change Option F1: General Help F2: Previous Value F9: Optimize Defaults F10: Save & Exit ESC: Exit
Version 2.15.1227. Copyright © 2012 American Megatrends, Inc.	

PC Health Status
PC Health Status Detect. BIOS will display current system temperature, CPU temperature, FAN rotate speed, and related voltage value.

Smart Fan Function
Enable or disable the smart fan function(the intelligent fan speed control function).

4.3 Chipset Menu

4.3.1 North Bridge

Aptio Setup Utility_Copyright (C) 2012 American Megatrends,Inc.	
VT-d Capability Supported VT-d [Enabled] Primary Display [IGD] Internal Graphics Mode Select [Enabled] DVMT/FIXED Memory [MAX]	→←: Select Screen ↑↓: Select Item Enter: Select +/-: Change Option F1: General Help F2: Previous Value F9: Optimize Defaults F10: Save & Exit ESC: Exit
Version 2.15.1227. Copyright © 2012 American Megatrends, Inc.	

VT-d
Intel Virtualization Technology enabled or disabled. Intel virtualization technology enables to run multiple O/S of the same kind or different kind by using the same physical platform so as to realize the management and allocation of computer resources, maximizing the resource utilization.

Primary Display
Select the internal or external graphics as the primary display.

Internal Graphics Mode Select
Internal Graphics mode select. To display the shared memory size before installing drives. System will auto allocate video memory size as per the DVMT after installing drives.

DVMT/FIXED Memory
Shared memory size.

4.3.2 South Bridge

Aptio Setup Utility_Copyright (C) 2012 American Megatrends,Inc.		
Audio Controller	[Enabled]	Enabled/Disabled Audio.
LAN1 Controller	[Enabled]	→←: Select Screen
LAN2 Controller	[Enabled]	↑↓: Select Item
Wake on LAN	[Enabled]	Enter: Select
Restore AC Power Loss	[Power On]	+/-: Change Option
		F1: General Help
		F2: Previous Value
		F9: Optimize Defaults
		F10: Save & Exit
		ESC: Exit
Version 2.15.1227. Copyright © 2012 American Megatrends, Inc.		

Audio Controller
Enable or disable the onboard Audio Controller.

LAN1/2 Controller
Enable or disable LAN1/2 Controller.

Wake on LAN
Enable or disable the Wake-on-LAN function.

Restore AC Power Loss
This option is to setup the system status while connecting the power again after the AC Power Loss

<Power Off>:System remains the status of power off. Users need to press the power button to start the computer.
<Power On>: System will reboot automatically when connecting to power supply.
<Last State>: Remain the same state as that before the power loss.

4.4 Boot Menu

Aptio Setup Utility_Copyright (C) 2012 American Megatrends,Inc.	
Boot Configuration Setup Prompt Timeout 1 Bootup Numlock State [On] Show Full Logo [Enabled] Boot Option Priorities Boot Option #1 [UEFI:Built-in EFI…] Boot Option #2 [UEFI:KingstonDataT] Boot Option #3 [KingstonDataTravele…] Hard Drive BBS Priorities	Number of seconds to wait for set-up activation key. 65535(0xFFFF) means indefinite waiting. →←: Select Screen ↑↓: Select Item Enter: Select +/-: Change Option F1: General Help F2: Previous Value F9: Optimize Defaults F10: Save & Exit ESC: Exit
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Setup Prompt Timeout
Number of seconds to wait for setup shortcut key. 60s is the max seconds of timeout. If don't press Setup key within the preset time, system will continue to start.

Bootup Numlock State
This function allows users to activate Numlock function when boot up.
[ON]:Numlock is activated when system boots up
[OFF]: Numlock under cursor control.

Show Full Logo
[Enabled]: Computer boot screen will show supplier's LOGO.
[Disabled]: Self-detect info will show when system boots.

Boot Option Priorities
System will detect devices according to the preset frequency until to find a boot device. Option #1 is the prior boot device.

Hard Drive BBS Priorities
This option contains HDD that can be used as boot device. If multiple HDDs in this option, priority should set for these HDDs, then the prior one will show in Boot Option #1.

4.5 Security Menu

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The password length must be in the following range: Minimum length 1 Maximum length 20 Administration Password User Password	Set Administrator Password →←: Select Screen ↑↓: Select Item Enter: Select +/-: Change Option F1: General Help F2: Previous Value F9: Optimize Defaults F10: Save & Exit ESC: Exit
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The password length: Min: 1 character, Maximum: 20 characters.

Administrator Password
To setup administrator password.

User Password
To set User Password. If you have set the password, system will display “Installed”; If not, system will display ”Not Installed”.

4.6 Save & Exit

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Load Defaults Save Changes and Exit Discard Changes and Exit Boot Override KingstonDataTraveler G3 PMAP UEFI:KingstonDataTraveler G3 PMAP UEFI:Built-in EFI shell	Load Default values for all The setup options →←: Select Screen ↑↓: Select Item Enter: Select +/-: Change Option F1: General Help F2: Previous Value F9: Optimize Defaults F10: Save & Exit ESC: Exit
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Load Defaults
Restore/Load Default values for all the BIOS setup options.

Save Changes and Exit
Press [Enter] to select this option and press [Enter] to confirm to save all BIOS changes and Exit.

Discard Changes and Exit
Press [Enter] to select this option and press [Enter] to confirm to discard all changes and exit.

Boot Override
Select the prior boot device.

Appendix

Appendix 1: Install Drives

Please install the driver as per the following steps:

Insert the programmed disk into CD-ROM, so installation of the driver an be made either automatically or manually. Now manually installation instructions are given as below:

1) A variety of options are available regarding manually installation, which you can check from Device Manager.
2) Right click “my computer “, select “management”, and go to “Device Manager”

3) Right click “display controller” in the menu of graphic card, select “Properties “, click “Driver”, select “update driver”.

4) Select “Show the list of all drivers which are designated locations so that choices can be made from it “, select “next.”

5) Select the location of display driver, click “ok”

6) Complete the installation, restart the system.

Proceed with the installation of other drivers after restarting the system, till all installations are completed. Then user can check from the device manager that it says device is working.

Appendix 2: Watchdog Programming Guide

Watchdog reference code (ASM)

Set the port to realize watchdog function through DEBUG order, so that it can carry out Watchdog Timer's various functions.

Port Instruction:

```
void main()
{
int indexp = 0x2e,datap = 0x2f;
unsigned char temp;
Outportb(indexp,0x87);
Outportb(indexp,0x87); //unlock
Outportb(indexp,0x2d);
temp = (unsigned char) inportb (datap);
temp &= 0xfe;
Outportb(indexp,0x2d);
Outportb(datap,temp); //set pin for watchdog
Outportb(indexp,0x07);
Outportb(datap,0x08);
Outportb(indexp,0x30);
Outportb(datap,0x01); //enable logical device
Outportb(indexp,0xf5);
Outportb(datap,0x00); //set second
Outportb(indexp,0xf6);
Outportb(datap,0x05); //set 5seconds
Outportb(indexp,0xf7);
Outportb(datap,0x00);
Outportb(indexp,0xaa); //lock
}
```

If system halted, the watchdog function enables system to auto reboot.

Appendix 3: Glossary

ACPI
Advanced Configuration and Power Management Interface for short. ACPI specifications allow OS to control most power of computer and its extended devices. Windows 98/98SE, Windows 2000 and Windows ME are all support ACPI, it provide users a flexible system power management.

BIOS
Basic input/output system. It's a kind of software including all in/out control code interface in PC. It will do hardware testing while system is booting, then system runs, it provides an interface between OS and hardware. BIOS is stored in a ROM chip.

BUS
In a computer system, it's the channels among different parts for exchanging data; it's also a group of hardware lines. BUS here refers to part lines inside CPU and main components of memory.

Chipset
Integrated chips for executing one or more functions. Here "Chipset" refers to system level chipset structured by Southbridge & Northbridge; it determines motherboard's structure and main functions.

CMOS
Complementary Metal-Oxide Semiconductor, a widely used semiconductor with the characteristic of high speed but low-power-consumption. CMOS here refers to part of reserved space in on-board CMOS RAM, for saving date, time, system information and system parameter etc.

COM
Computer-Output Microfilmer. A universal serial communication interface, usually adopts normative DB9 connector.

DIMM
Dual-Inline-Memory-Module. It's a small circuit board with memory chipset, providing 64bit RAM bus width.

DRAM
Dynamic Random Access Memorizer. It's a normal type of universal memory often with a transistor and a capacitance to store 1 bit. With the development of the technology, more and more types of ORAM with various specifications exist in computer application, such as SDRAM, DDR SDRAM and RDRAM.

IDE
Driver specifications for integrated circuit devices, It is widely used for connecting HDD / CD-ROM devices.

IrDA
Infrared Data Association for short. Here it refers to infrared transmit interface, to connect infrared transmit devices. This sort of device transmits data by infrared light-wave without connecting any cables. It has been developed into a standard now.

LAN
Network interface. Network grouped by correlative computers in a small area, generally in a company or a building. Local area network is buildup by sever, workstation, some communications links. Terminals can access data and devices anywhere through cables, which enables users to share costly devices and resource.

LED
Light-Emitting Diode. A semiconductor device that shines when power supply is connected, often used to denote info directly by light, for example, to denote power on or HDD work normally.

PnP
Plug-and-Play. It is a specification that allows PC to configure its external devices automatically and can work independently without the manual operation by its user . To achieve this function, its BIOS should be able to support PnP and a PnP expansion card

POST
Self-test when power on. While the system is booting, BIOS will do an uninterrupted testing to the system, including RAM, keyboard, hard disk driver etc.to check if all the components are in normal situation and work well.

PS/2
A keyboard & mouse connective interface specification developed by IBM. PS/2 is a DIN interface with only 6PIN; it also can connect other devices, like modem

USB
It is Universal Serial Bus for short. A hardware interface adapts to low speed peripherals, and is always used to connect keyboard, mouse etc. One PC can connect maximum 127 USB devices, providing 12Mbit/s transmit bandwidth USB supports hot swap and multi- data stream, namely, you can plug USB devices while system is running, system can auto-detect and makes it work on.

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